

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-8. (canceled)

9. (Currently amended) A recombinant enzyme capable of hydrolyzing at least one organophosphate selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, wherein the recombinant enzyme comprises an amino acid sequence which is at least about 75% identical to SEQ ID NO.8, wherein the recombinant enzyme comprises amino acid residues conserved between the sequences provided in Figure 4 with the exception that the recombinant enzyme comprises an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly at position 251.

10. (Withdrawn) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with an enzyme encoded by a DNA molecule comprising a nucleotide sequence having at least 60% homology with Lc α E7, in which the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

11. (Withdrawn) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the

organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with a cell transformed with a DNA molecule comprising a nucleotide sequence having at least 60% homology with Lc α E7, in which the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

Claims 12 and 13 (canceled)

14. (Currently amended) The recombinant enzyme according to claim 9, wherein the DNA molecule encoding the recombinant enzyme has at least 80% homology/identity with SEQ ID NO. 7

15. (Currently amended) The recombinant enzyme according to claim 9, wherein the DNA molecule encoding the recombinant enzyme has at least 95% homology/identity with SEQ ID NO. 7.

16. (Previously presented) The recombinant enzyme according to claim 9, wherein the DNA molecule encoding the recombinant enzyme has the nucleotide sequence of SEQ ID NO:1, 3, or 5, or a sequence which hybridizes under high stringency conditions to SEQ ID NO. 1, 3 or 5, with the proviso that the recombinant enzyme encoded by the DNA molecule differs from SEQ ID NO. 8 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

17. (Previously presented) The recombinant enzyme according to claim 9, wherein said Trp at position 251 is substituted with Leu or Ser.

18. (Previously presented) A recombinant enzyme capable of hydrolyzing at least one organophosphate selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, wherein the recombinant enzyme has the amino acid sequence of SEQ ID NO.10 or the amino acid sequence of SEQ ID NO. 13 in which Trp at position 251 is replaced with Ser.

19. (Withdrawn) The method according to claim 10, wherein said DNA molecule has at least 80% homology with the DNA encoding LcαE7.

20. (Withdrawn) The method according to claim 10, wherein said DNA molecule has at least 95% homology with the DNA encoding LcαE7.

21. (Withdrawn) The method according to claim 10, wherein said DNA molecule has the nucleotide sequence of SEQ ID NO:1, 3, or 5, or a sequence which hybridizes thereto with the proviso that the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

22. (Withdrawn) The method according to claim 10, wherein said Trp at position 251 is substituted with Leu or Ser.

23. (Withdrawn) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with an enzyme encoded by a DNA molecule encoding a polypeptide having the amino acid sequence of RM-8Con shown in Fig. 1 or the amino acid sequence of Md α E7 shown in Fig. 3 in which Trp at position 251 is replaced with Ser.

24. (Withdrawn) The method according to claim 11, wherein said cell is a prokaryotic cell or an insect cell.

25. (Withdrawn) The method according to claim 11, wherein said DNA molecule has at least 80% homology with the DNA encoding Lc α E7.

26. (Withdrawn) The method according to claim 11, wherein said DNA molecule has at least 95% homology with the DNA encoding Lc α E7.

27. (Withdrawn) The method according to claim 11, wherein said DNA molecule has the nucleotide sequence of SEQ ID NO:1, 3, or 5, or a sequence which hybridizes thereto with the proviso that the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

28. (Withdrawn) The method according to claim 11, wherein said Trp at position 251 is substituted with Leu or Ser.

29. (Withdrawn) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with a cell transformed with a DNA molecule encoding a polypeptide having the amino acid sequence of RM-8Con shown in Fig. 1 or the amino acid sequence of Md α E7 shown in Fig. 3 in which Trp at position 251 is replaced with Ser.

30. (New) A recombinant enzyme capable of hydrolyzing at least one organophosphate selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, wherein the recombinant enzyme comprises an amino acid sequence which is at least about 60% identical to SEQ ID NO.8, wherein the recombinant enzyme comprises amino acid residues conserved between the sequences provided in Figure 4 with the exception that the recombinant enzyme comprises an amino acid selected from the group consisting of Leu, Ser. Ala, Ile, Val, Thr, Cys, Met and Gly at position 251